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Abstract of the Disclosure

A first layer of titanium nitride (TiN) is formed on a semiconductor structure, such as an interconnect via. Then, a second layer of TiN is formed on the first layer of TiN. The first layer of TiN is amorphous. The second layer of TiN is polycrystalline, having a mixed grain orientation. Finally, an aluminum film is formed on the second layer of titanium nitride. Optionally, a titanium silicide layer is formed on the semiconductor structure prior to the step of forming the first layer of titanium nitride. Interconnects formed according to the invention have polycrystalline aluminum films with grain sizes of approximately less than 0.25 microns.

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